Claims

We Claim:

1. A mass flowmeter system for use in controlling a reformation reaction in a hydrogen production system, comprising:

a hydrocarbon feedstock supply for supplying a hydrocarbon feedstock to said hydrogen production system;

a steam supply for supplying steam to said hydrogen production system;

a mass flowmeter operably connected to said hydrocarbon feedstock supply for measuring a hydrocarbon mass flow rate of said hydrocarbon feedstock supplied to said hydrogen production system, and for producing a hydrocarbon flow rate signal representing said hydrocarbon mass flow rate;

a second flowmeter operably connected to said steam supply for measuring a steam flow rate of said steam supplied to said hydrogen production system, and for producing a steam flow rate signal representing said steam flow rate; and

a controller operable for receiving said hydrocarbon flow rate signal and said steam flow rate signal, the controller having program instructions for controlling a ratio of said hydrocarbon feedstock and said steam delivered to said hydrogen production system.

2. The mass flowmeter system of claim 1 wherein said mass flowmeter is a Coriolis mass flowmeter.

3. The mass flowmeter system of claim 1 wherein said second flowmeter is a second mass flowmeter.

4. The mass flowmeter system as set forth in claim 3 wherein said second mass flowmeter is a Coriolis mass flowmeter.

5. The mass flowmeter system of claim 1 wherein said program instructions include instructions for adjusting a ratio of said steam mass flow rate to said hydrocarbon mass flow rate, the hydrocarbon feedstock having a plurality of hydrocarbon fractions.

6. The mass flowmeter system of claim 5, wherein the program instructions include instructions for determining said ratio from a correlation based upon a measured physical parameter of said hydrocarbon feedstock.

7. The mass flowmeter system of claim 6, wherein said measured physical parameter comprises density.

8. The mass flowmeter system of claim 7, wherein the mass flowmeter is a Coriolis flowmeter operable for performing a density measurement, and the Coriolis flowmeter is operable for providing said controller with a signal representing said density measurement.

9. The mass flowmeter system of claim 5, wherein the program instructions include instructions for using said ratio as a constant.

10. A method of operating a mass flowmeter for use in steam reformation of hydrocarbons processing where a hydrogen production system is in use, said method comprising the steps of:

measuring a mass flow rate of a hydrocarbon feedstock delivered to said hydrogen production system to provide a hydrocarbon mass flow rate measurement;

measuring a second flow rate of steam delivered to said hydrogen production system to provide a steam flow rate measurement; and

controlling the amount of said hydrocarbon feedstock and said steam delivered to said hydrogen producing system based upon said hydrocarbon mass flow rate measurement and said steam flow rate measurement.

11. The method according to claim 10, wherein said step of measuring a mass flow rate comprises using a Coriolis mass flowmeter to obtain said hydrocarbon mass flow rate measurement.

12. The method according to claim 10, wherein said step of measuring a second flow rate comprises using a second mass flowmeter.

13. The method according to claim 12, wherein said second mass flowmeter is a Coriolis mass flowmeter.

14. The method according to claim 10, wherein said step of controlling comprises adjusting a ratio of said steam mass flow rate to said hydrocarbon mass flow rate for a plurality of hydrocarbon feedstocks.

15. The method according to claim 14, wherein said step of controlling includes determining said ratio from a correlation based upon a measured physical parameter of said hydrocarbon feedstock.

16. The method according to claim 16, wherein said measured physical parameter comprises density.

17. The method according to claim 16, said mass flow meter being a Coriolis flowmeter operable for performing a density measurement, and comprising a step of obtaining said density by direct measurement from said mass flowmeter.

18. The method according to claim 10, wherein the step of controlling occurs contemporaneously with said steps of measuring said mass flow rate and measuring said second flow rate.

19. The method according to claim 10, comprising repeating said steps of measuring said mass flow rate and measuring said second flow rate while said step of controlling is underway.